

Genotypic analysis of a HCV infection outbreak detected in haemodialysis unit in Turkey

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Background

- The prevalence of HCV infection in hemodialysis patients is much higher than in the normal population.
- In Turkey, HCV prevalence is 13.2% in dialysis patients.
- In dialysis units patients were routinely tested for anti-HCV at the beginning of each month on an increase in AST, ALT. Studies have been initiated due to clustering of new acute hepatitis C cases.
- In this report, an outbreak of acute HCV infection detected in patients receiving treatment at a hemodialysis center has been analyzed.

Results:

- HCV RNA positivity was detected in 20 of 114 patients.
 - Viral load ranged from 163 to 63348658 IU/ml.
 - Genotype analysis revealed that all patients were infected with Genotype 1b.
 - HCV RNA positivity was not found in the staff, swab samples and water samples.
 - Blood samples of the patients were re-tested for HCV RNA monthly for four months.
 - Except three cases that were detected in the second month, all cases were found positive in the first test.
- Unfortunately, the source could not be fully identified.

Materials/Methods

- Blood samples of 114 patients were sent to the National HIV/AIDS Confirmation and Viral Hepatitis Reference Laboratory for HCV RNA PCR and genotype detection. Additionally, swab samples taken from the inlet and outlet sections of the dialysis machines and from the water tanks using 100 liter water were also tested for the presence of HCV RNA.
- Virologic status of HCV RNA of the staff was evaluated.
- PCR analysis was performed with Qiagen artus HCV Kit.
- In case of HCV RNA positivity, NS5B region of the virus was amplified, using primers PR3.1, PR4, PR5 and sequenced using Abi 3500 Genetic Analyser (Applied Biosystems).
- Multiple sequence alignments were generated using the Clustal X 2.012 version.
- Phylogenetic analyses were conducted using MEGA version 6. The phylogenetic tree was constructed by the neighbour joining method.

Conclusions

- In the outbreaks previously reported by the CDC, source of the outbreak was contaminated use of equipment and materials between patients, frequent replacement of bags of infected material, the cleaning of machine surfaces regularly, transport of clean and dirty materials on the same car.
- There is a low evidence that HCV is detected in dialysis device waters during outbreaks at dialysis centers, but isolation is reported to be very difficult.

